

# Hitting the ground running: How Labour can prepare the grid for decarbonisation by 2030

**PUBLICFIRST** 

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## Executive summary

At Labour Party Conference in 2022, Keir Starmer announced that a Labour government would deliver a decarbonised electricity grid by 2030. In the days following, several commentators argued that the goal is impossible and pointed to serious doubts over the current government target of 2035. This is due to numerous challenges across generating, transporting, and balancing the low-carbon electricity that is needed to power our homes, public services, and businesses.

Heeding this, Labour used its 2023 conference to announce how it intends to unblock a central limitation to its 2030 target, increasing grid capacity. However, there is significantly more to do. Labour will need to address barriers for commercialising flexible low-carbon generation as well as more recent financing setbacks for offshore wind; scaling demand flexibility and enhancing regional cooperation in the North Sea and Irish Sea for interconnection. In addition, each of these face critical supply chain constraints.


Though we reflect on these wider policy challenges, this report unpacks the detail and political rationale behind Labour's announcements on network infrastructure, and how they can be delivered in practice.

As consumer energy needs shift from today's mix of gas, petrol and electricity towards electric-only households, and sources of renewable energy proliferate, much more hardware will be required to move green electricity around the country. This has received increasing attention in recent months with MPs opposing new power lines and waiting times for grid connections making headlines. Critical areas for further research are highlighted in the final chapter.

Despite these challenges, we argue that the 2030 target is not impossible – merely very difficult – and that it presents an ambitious goal for industry and the public to rally behind. It will require significant political leadership, policy change and follow-through on promises to deliver a programme of such scale and pace. The announcements in Liverpool could begin to widen the window of probability to meet Labour's 2030. These included:

- **Streamlining planning and consenting processes** beyond even the ambition of the Electricity Networks Commissioner's review by implementing lessons learnt from environmental surveys and resourcing planning authorities. In some cases, Labour would need to be prepared to call in applications by the Secretary of State.
- **Securing supply chain capacity to build, fast**, by coordinating transmission operators through GB Energy to launch a super-tender that will procure the grid supply chain that Britain needs. This report provides further detail on how this could work in practice through a super-consortium of industry leaders to inform the process of a government-backed bulk booking initiative that would reserve early manufacturing capacity.
- **Opening up new grid construction to competitive tendering** to deliver investment, capacity, skills, and urgency for building the grid we need, with GB Energy looking to bid into that competition to build or co-build where necessary.





A broader scope of action on the grid, could open it further:

- **Confirm strategic plans quickly** to know what needs building and where by instructing the Future System Operator (FSO) to ensure network plans reflect the 2030 target.
- **Facilitate investment in homegrown supply chains** to accelerate supply chains further by enabling the swift consenting and scaling of UK manufacturing sites for grid-related equipment.
- **Create national buy-in for the programme** through a dedicated public campaign.

Building the transmission network infrastructure for 2030 requires bold action across almost all aspects of a project's lifecycle. The success of this will depend on numerous integral policy decisions. As such, there is a risk that delay in one policy area or sector of the economy could mean a failure to deliver by 2030. But the size of this challenge is not fixed. If Labour is to succeed in decarbonising the grid by 2030 it will need to think not only about how to speed up the building of pylons and substations, but also about all of the ways in which it can minimise the need and stress on the system while maintaining a reliable and green grid:

- **Spread the burden (and risk) of delivering decarbonisation by 2030**, by adopting a targeted but holistic approach to support multiple technologies - from long term storage to carbon capture - that can create more upside potential. This would also maintain different pathways and alternative opportunities presented by the individual nascent industries to reach scale.
  - **Refine what we mean by decarbonisation**, and include slightly more gas with carbon capture in the 2030 energy mix.
  - **Reduce our overall need for electricity** with a commitment to energy efficiency across the economy.
  - **Reduce peak demand for electricity**, by investing in energy storage technology and greater demand-side flexibility.
- **Avoid additional complexities from REMA** by concentrating reform efforts on near-term incremental changes and policies that are critical to the 2030 programme. More radical reforms should be reviewed, with implementation of any deemed worthwhile moved to after 2030.

There are two key political risks to consider from these actions: cost, and local opposition to grid infrastructure. For Labour, the level of exposure to these risks differs. First, accelerating the target to 2030 increases the public costs and private investment required to deliver infrastructure. Public money from Labour's existing Green Prosperity Plan pledge will be critical to leading procurement of critical materials abroad as well as scaling home-grown supply chains. As investment in grid infrastructure rises, Labour will have to contend with the politics of energy bills and the challenges it raises for a just transition – further work is required to estimate the likely impact of 2030 on bills.

Second, electorally, Labour is less vulnerable to local opposition in the areas where key transmission infrastructure will likely be built, compared to other parties. Public First analysis of data shared by the ESO indicates that of the 36 UK parliamentary constituencies impacted by the Holistic Network Design (HND) plans, just one is currently held Labour seats and three



more are former Red Wall seats that voted Conservative in 2019. Four of the impacted parliamentary constituencies are currently SNP seats - Labour will face a tough political challenge north of the border to overcome differences in the planning and consenting system and deliver key grid infrastructure.

There is a political risk with setting any target and not hitting it. But there are also risks associated with being inconsistent and not sticking to a target – as seen in recent government delays on to green targets. Striving for a highly ambitious goal in its own right is worthwhile – Labour will bring additional attention and action from public and private sectors to national priorities where progress may have lagged. Concerted effort towards the 2030 target will accelerate delivering benefits from improved energy efficiency, scaling British supply chains, and connecting more clean, secure energy. If a Labour government commits wholeheartedly to this target and delivers a few months late, this will not represent a failure; failure in this context would be to underestimate the scale of the challenge and not commit at the earliest opportunity to bold action.

While we argue for spreading the programme across as many economic sectors as possible, we also note that a major risk to the deadline is the way in which it cuts across more than one Government department. DESNZ will have the coordinating role to accelerate much of this, but they will need assistance from DLUHC, DEFRA, DBT, HMT, No.10, Ofgem, FSO, devolved governments, local planning teams, network operators and business. A programme of this kind is analogous to the major building programs of the post-war era and will require prolonged political attention and will. A Cabinet Office minister should therefore be appointed to oversee and coordinate this programme within a brief for meeting the 2030 target. The ownership of GB Energy would sit with this minister, like the way the Low Carbon Contracts Company is owned by DESNZ Secretary of State.

Sequencing is also vital. With so much to do, the minister in charge of reaching 2030 will need to prioritise ruthlessly. To guide this process, we provide a sequenced and itemised ‘to do’ list, showing when each item must be tackled on page 39. These policies will need to set the conditions to deliver newly planned transmission infrastructure in the following timeline to achieve the 2030 target.



**Example timeline for newly planned transmission infrastructure: Labour vs Electricity Networks Commissioner**

	2025	2026	2027	2028	2029	2030	2031
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Centralised Strategic Network Plan (2030)	Orange	Orange					
Investment framework for CSNP2030 + competitive tender		Orange					
Regulatory approval			Orange				
Routing and design			Orange	Orange			
Planning pre-application				Orange	Grey		
Environmental assessment				Orange	Grey		
Fast-track planning approval				Orange	Grey		
Land purchase				Orange	Grey		
Engaging with supply chain	Orange	Orange	Orange	Orange	Orange	Orange	Grey
Build					Orange	Orange	Grey

Note: Orange represents Public First’s estimate of Labour’s required timeline for delivering new network plans. Grey represents the estimated accelerated timeline of delivering new network plans under Electricity Networks Commissioner Nick Winser’s recommendations.



## Introduction

In October 2021, the Government committed to decarbonising the UK power system by 2035 ahead of COP26. In the period since then Russia's invasion of Ukraine has emphasised the need to reduce our reliance on fossil fuels and boost our energy independence to protect households from volatile energy bills. In 2022, the Labour Party went beyond the Government's existing commitment and promised to deliver a decarbonised power system by 2030.


Both targets are ambitious. Today our electricity system is nearly half (48.5%) generated by renewables, up from 2% in 1991. 40% is gas and coal generated. Reaching nearly 100% requires a transformation of our power system. This will depend on significant amounts of infrastructure build in order to generate, transport, and balance the low-carbon electricity needed to power our homes, public services, and businesses.

Broadly speaking, beyond the physical rollout of new wind and solar farms, a decarbonised system has different infrastructure needs to what we currently have. First, the generation has moved. Our grid infrastructure was built to transport electricity generated by a smaller number of big coal and gas power stations in, for example, the Midlands, South Wales and the North East. In a decarbonised system, electricity will be generated by a large number of generators, many on the coast or offshore in Scotland or East Anglia. Many smaller-scale generators will also be spread across communities throughout Britain. Second, managing low-carbon electricity that is largely intermittent (wind and solar) requires a range of more flexible solutions than electricity that is consistently generated (gas and coal). This includes flexible low-carbon sources which can be turned up when the sun doesn't shine and the wind doesn't blow, storage, demand side flexibility options to reduce peak demand, and storage.

Recent analysis from the Committee for Climate Change (CCC) and National Audit Office (NAO) indicate that achieving the existing 2035 target is already at risk. Labour's ambition to bring the target forward by five years requires an acceleration of existing policy and infrastructure processes as well as some entirely new approaches to overcome critical pinch-points. These pinch-points include commercialising flexible low-carbon generation as well as more recent financing setbacks for offshore wind; scaling demand flexibility and enhancing regional cooperation in the North Sea and Irish Sea for interconnection; and increasing grid capacity. In addition, each of these faces critical supply chain constraints.

Though we necessarily offer some reflections on the wider policy challenges, the focus of this report is the last item on that list: network infrastructure. As consumer energy needs shift from today's mix of gas, petrol and electricity towards electric-only households, and sources of renewable energy proliferate, much more hardware will be required to transport green electricity around the country. Critical areas for further research are highlighted in the final chapter.

The state of the grid has drawn increasing attention in recent months as MPs oppose new power lines, and as connection waiting times increase. Renewable projects that are critical to



decarbonisation currently face delay due to an inability to connect to the network. A potential Labour government has stated its ambition to move very rapidly to unblock critical bottlenecks and strategically plan the networks to connect more clean power, this alongside other actions laid out here should help to increase investor confidence, and reduce the cost of constraint management for consumers which totalled £1.94bn last year alone.<sup>1</sup>

Expert stakeholders across the industry have warned that getting the grid to 2030 requires a war footing of pace and scale to, as this report lays out, invest in infrastructure and technology, resource critical institutions, cut bureaucratic processes, and overcome global supply constraints. As a result, Labour will face difficult decisions on cost and public acceptance.

There is a political risk with setting any target and not hitting it. But there are also risks associated with being inconsistent and not sticking to a target – as seen in recent government delays on to green targets. Striving for a highly ambitious goal in its own right is worthwhile – Labour will bring additional attention and action from public and private sectors to national priorities where progress may have lagged. Concerted effort towards the 2030 target will accelerate delivering the benefits of improved energy efficiency, scaling British supply chains, and connecting more clean, secure energy.

#### **A note on the report**

This report was commissioned by RenewableUK. The research primarily comprised stakeholder engagement and policy analysis. The engagement included expert interviews and roundtable discussions of industry stakeholders, independent energy and grid experts, and public sector officials over the summer months of 2023.

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<sup>1</sup> National Audit Office, *Decarbonising the power sector*, March 2023





## How electricity gets transported

The grid is made up of two key networks: transmission and distribution. The majority of electricity generated (wind, solar, coal, gas, nuclear) is connected to the high-voltage **transmission network** and transported along power lines. There are three companies which build, own and manage the transmission infrastructure.

Substations convert the high-voltage electricity from the transmission network to a lower voltage so it can be delivered along the **distribution network** to homes and businesses safely. The distribution network is built, owned, and managed through 14 geographical licenses for **Distribution Network Operators (DNOs)** which are held by 6 company groups. Less than a third of generated electricity is connected directly into the distribution network through smaller-scale generation sites.

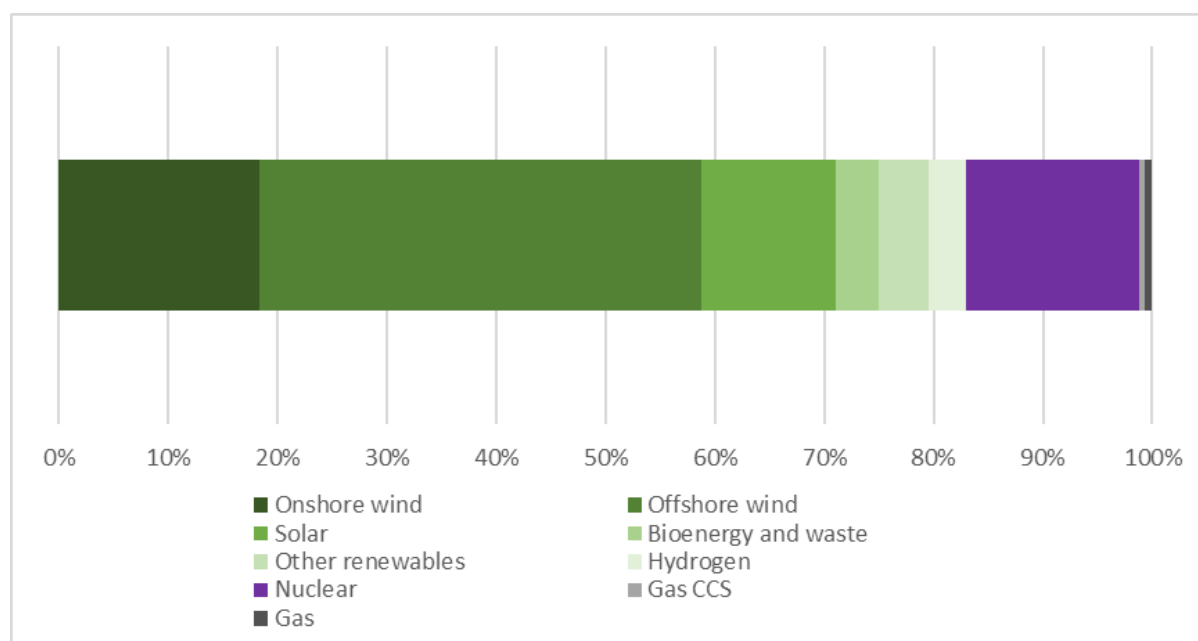
National Grid Electricity System Operator (ESO) then balances the electricity across the GB network so that consumer demand is met by a sufficient supply of generation, keeping the lights on, and our homes and industry powered. Upon the passing of the Energy Bill currently going through Parliament, the ESO will evolve from a private company into a public body – the Future System Operator (FSO).

We pay for the costs of building and maintaining pylons, cables, and other infrastructure through our energy bills. **Ofgem, the regulator**, decides how these charges operate. This report is mostly focused on the shift in the transmission networks required by renewable energy generation - this is where the majority of network infrastructure investment is needed. Delivering the necessary infrastructure requires the three transmission owner companies to deliver new infrastructure, and under current rules would require users to pay for it on their energy bills. This investment to connect and transport low-carbon power will unlock Britain's net zero ambitions creating jobs, bringing returns for our pension funds, reducing dependency on Russia and others for gas, delivering cleaner air for our children and protecting the environment from climate change.

## Labour's 2030 ambition

Labour's target for a zero-carbon power system is based on the energy think tank Ember's modelling, which assumes 99.3% of zero-carbon supply by 2030. This target comprises 71% combined wind and solar (60GW offshore wind, 35GW onshore wind and 50GW solar), and 16% nuclear (7GW). This plan allows for 1.2% total gas for security of supply, around half with Carbon Capture and Storage (CCS).

### Share of domestic electricity generation, by fuel type (%) in 2030 under Ember's model



Source: Ember, 2022

According to Ember, achieving this will require adding 90GW of wind and solar by 2030 – and the UK has sufficient wind and solar capacity in the pipeline to be on track for this, if all projects are approved and constructed.<sup>2</sup>


At a high level, Labour has committed to various policy aims to support decarbonisation. Most of these aims (below) signal the right direction of travel, although less focus has been given to the mechanisms of how these will be delivered.

- A Green Prosperity Plan to invest £28bn of capital a year by 2027 into the green economy, though it is unclear how this will be allocated;
- General planning reforms across the economy to be on the side of “builders not blockers;”
- An explicit requirement for large energy infrastructure to provide community benefits;<sup>3</sup>
- Last year, Labour announced the establishment of a public energy company, GB Energy, focused on part or full public ownership of clean energy generation.<sup>4</sup> Early engagement

<sup>2</sup> Ember, *A path out of the UK gas crisis*, September 2022

<sup>3</sup> Labour Party, *Make Britain a clean energy superpower*, June 2023

<sup>4</sup> Labour Party, ‘Keir Starmer calls for new national champion in clean energy, Great British Energy, with a mission to cut bills, create jobs, and deliver energy independence’, 27 September 2022



in this project found that stakeholders were unclear of the role of GB Energy. Since then, Labour provided further details on the company's remit in its Climate Mission report including co-investing in established technologies (and their supply chains); investment and ownership in leading-edge technologies; and scaling up community energy projects.<sup>5</sup>

In June 2023, Labour committed to further high-level policy aims for the grid:<sup>6</sup>

- “Producing and starting the rollout of a plan within the first year of government to strategically look ahead and allow investment”;
- Empowering a Future Systems Operator to work with Ofgem and Distribution Network Operators for regional system plans;
- Unblocking grid queues by preventing ‘zombie’ projects that are not progressing from stopping projects that are ready to connect;
- Increasing the grid’s capacity;
- Building and using the energy system in a smarter way through regulation to encourage smart demand management and accelerating the rollout of local renewable power.

In announcements at Labour conference in Liverpool, October 2023, some detail was added to how this would be achieved:<sup>7</sup>

- Use GB Energy to bring the Transmission Operators (TOs) together in a consortium to standardise parts and coordinate the private sector to acquire the grid supply chain they need;
- Open grid construction to competition, possibly to include from GB Energy;
- Support Local Authority planning capacity with funding for new planning officers.

This report explores the technicalities underlying these policies including how and when they will need to be implemented to prepare the grid for the 2030 target, based on Public First’s engagement with a range of sector stakeholders.

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<sup>5</sup> Labour Party, *Make Britain a clean energy superpower*, June 2023

<sup>6</sup> Ibid

<sup>7</sup> Labour Party, *Labour sets out plan to “rewire Britain” and build the clean energy grid the country needs*, October 2023



## Building the network for 2030

A critical aspect of achieving a clean, reliable decarbonised power system by 2030 includes significant expansion and reinforcement of the networks. The CCC estimates that to deliver clean power by 2035, the UK needs to double the size of the transmission grid – building 65.8GW of grid between 2025 and 2035.<sup>8</sup> This is almost 6 times the amount of grid capacity (11.35GW) built from 2012 to 2021.<sup>9</sup> In England and Wales alone, National Grid estimates it will have to install over five times more transmission infrastructure over the next seven years than has been delivered in the last three decades.<sup>10</sup>

The total investment cost of readying the network for 2030 is not modelled. Across Great Britain, it is estimated that at least £50bn investment is required in the transmission network by 2030 to deliver on ESO's existing plans for the current 2035 target.<sup>11</sup> Follow up plans currently being developed by the ESO are set to add significantly to these costs. By comparison, around £100bn was invested in all energy networks (transmission and distribution) in the last 30 years.<sup>12</sup>

This section focuses on transmission because that is where most network investment is required for 2030, compared to the distribution network, even under high demand scenarios for electrification (for heat and transport).<sup>13</sup> The vast majority of distribution reinforcements are required for 2040 and 2050 net zero targets.<sup>14</sup> Constraint costs are a key indicator of the need for transmission investment – the National Audit Office (NAO) states that these costs highlight the effects of poor sequencing to build and upgrade network infrastructure with generation. The NAO's recent report on decarbonising power states that “*if generators cannot access the grid, generation exceeds network capacity, or generation exceeds demand, then costs arise to consumers as generators are paid to constrain their output.*”<sup>15</sup> Costs are also associated with turning other power sources, such as gas, up as a result. Constraint costs have ballooned in recent years - reaching £1.94bn on consumers' bills in 2022 up from £1.14bn in 2021. While much of this year-on-year increase is likely due to higher gas prices, constraint costs were rising prior to the energy crisis. Between 2018 and 2020 costs doubled from £0.51bn to £1.02bn.<sup>16</sup> ESO modelling has estimated that constraint costs could increase from around £500 million per year in 2021 to a peak of between £1-2.5 billion per year in the mid-late 2020s.<sup>17</sup>

It currently takes 12 to 14 years from the identification of need through to commissioning network infrastructure. A Labour government would have to deliver the necessary upgrades in

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<sup>8</sup> Committee for Climate Change, *Delivering a reliable decarbonised power system*, March 2023

<sup>9</sup> Tony Blair Institute, *Powering the Future of Britain: How to deliver a decade of electrification*, June 2023

<sup>10</sup> National Grid, *Delivering for 2035*, May 2023

<sup>11</sup> ESO's Holistic Network Design is set to deliver £54bn investment to 2030 to connect 23GW of offshore wind

<sup>12</sup> National Grid ESO, *Electricity 10-year statement*, 2022

<sup>13</sup> Ibid

<sup>14</sup> BEIS, *Appendix I: Electricity Networks Modelling*, August 2022

<sup>15</sup> National Audit Office, *Decarbonising the power sector*, March 2023

<sup>16</sup> Ibid

<sup>17</sup> National Grid Electricity System Operator, *'Modelled Constraint Costs: NOA 2020/21, 2021*



just five years. This will require a coordinated plan, significant shortening of bureaucratic processes, the resourcing of critical institutions and an increase in public costs and private investment. In August 2023, the Electricity Networks Commissioner Nick Winser published his independent report on how to halve the time it takes to deliver transmission from 14 years to seven. Under the report’s recommendation timeline, the vast majority are estimated to be implementable by the end of 2025 - however, this ultimately depends on the current Government's willingness to push through contentious planning changes in an area the overall electorate doesn’t care about during the back-end of its parliamentary term. This seems implausible. As it stands, the current Government has yet to respond in full to the recommendations, though recent policy announcements from the Prime Minister indicate that a spatial plan of sorts will be implemented, presumably based on Winser’s recommendation.

Under the Electricity Networks Commissioner’s recommendations alone, a Labour government would be hard-pressed to produce the necessary infrastructure before 2034. If reforms are not in place, a Labour government would need to ensure they are implemented immediately. Labour will need to shorten the timeline even further to five years to get to 2030 - as shown in the table below.

The following timeline is an example of what the process for delivering new transmission infrastructure plans would need to look like to build for the 2030 target. This is based on the minimum time required to construct, which was identified as two and a half years. It is more ambitious than Electricity Networks Commissioner - which itself requires multiple policy changes. The difference here is that Labour will need to enable competition to leverage more capacity to deliver projects, streamline consenting further, and commit well in advance to purchasing from a supply chain that has globally high demand for its materials and services.

**Example timeline for newly planned transmission infrastructure: Labour vs Electricity Networks Commissioner**

	2025	2026	2027	2028	2029	2030	2031
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Centralised Strategic Network Plan (2030)	Orange	Orange					
Investment framework for CSNP2030 + competitive tender		Orange					
Regulatory approval			Orange				
Routing and design			Orange	Orange			
Planning pre-application			Orange	Orange	Grey		
Environmental assessment			Orange	Orange	Grey		
Fast-track planning approval			Orange	Orange	Grey		
Land purchase			Orange	Orange	Grey		
Engaging with supply chain	Orange	Orange	Orange	Orange	Orange	Orange	Grey
Build					Orange	Orange	Grey

Note: Orange represents Public First's estimate of Labour's required timeline for delivering new network plans. Grey represents the estimated accelerated timeline of delivering new network plans under Electricity Networks Commissioner Nick Winser's recommendations.





## Strategic plans

To build transmission infrastructure rapidly and ensure it is reliable and cost-effective, we need greater coordination between the networks and generation. Previously, to de-risk early investment in offshore wind, developers were allowed to build their own network and connections to shore. This incentivised developers to reduce costs by connecting to the closest point onshore with limited thought to the onshore infrastructure required to transport that electricity to where it was needed.<sup>18</sup> Onshore reinforcements would then be made once the need for it was proven and, in the meantime, the constraints in the network would be managed and paid for through consumers' energy bills. However, with the pace required to build and connect significantly more renewables, delivering the networks will need to move at speed and at times ahead of generation.

As it stands, there is no existing network plan to support the current 2035 zero-carbon power system target. This is largely a product of the current structure and regulation of our energy system in which roles and responsibilities are dispersed between the Electricity System Operator (ESO), the regulator Ofgem, Transmission Owners (TOs) and Distribution Network Operators (DNOs). Currently the process for network planning is relatively stop-start across various key documents from the ESO, including the Future Energy Scenarios, Electricity Ten-Year Statements, and Network Options Assessment. At a distribution level, DNOs develop their own future energy scenarios (DFES) to inform their business plans. Until recently, there has been very limited joined up thinking for strategically planning the networks.


This is now changing. The ESO is producing interim plans and intends to provide a full strategy by 2026 of what is currently needed and likely to be needed.

- **Already produced.** The Holistic Network Design (HND) provides the necessary transmission expansion and reinforcement plans for connecting 23GW of the 50GW of offshore wind by 2030. This is about one third of the offshore wind Labour will need by 2030.
- **Soon to be produced.** Further plans for network projects are currently in progress for a HND follow-up exercise to connect the remaining 50GW of offshore wind. As well, the second transitional Centralised Strategic Network Plan (tCSNP) is set to be published this winter which will seek whole energy system solutions.
- **By 2026.** Subject to the passing of the Energy Bill that is currently going through Parliament, a new public body Future System Operator (FSO), built on the existing ESO, will be responsible for delivering a Centralised Strategic Network Plan (CSNP). An Ofgem consultation on the CSNP states that it is expected to be published by 2026. This will provide a whole-system assessment of the transmission network needs for onshore and offshore for electricity, gas, and hydrogen. Annual products will be produced from 2024 to optimise near-term network planning.<sup>19</sup>

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<sup>18</sup> National Grid ESO, *Pathway to 2030: Holistic Network Design*, June 2022

<sup>19</sup> Ofgem, *Centralised Strategic Network Plan: Consultation on framework for identifying and assessing transmission investment options*, July 2023

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- **Recently committed.** On 20 September 2023, the Prime Minister announced his Government would set out the UK's first ever spatial plan for energy infrastructure. Details of what the current Government's intended spatial plan might include and a timeline of when it could be implemented have yet to materialise. If it were to reflect recommendations made by the Electricity Networks Commissioner Nick Winser's then it is possible that the FSO would spatially map the whole energy system across GB over a time period of several years, which would provide the needs case for planning and consenting. According to Winser's recommendations, a spatial plan would create an overarching reference for many network plans including the CSNP, hydrogen network plan, CCUS plan and regional energy plans. Depending on its timeline, the spatial plan could contribute to accelerating the speed of the overall process, contributing to an already ambitious timeline.


As it stands, network plans are not aligned with Labour's generation targets, such as the 60GW of offshore wind by 2030, compared to 50GW under current plans. Until a potential change of government, ongoing work to produce further plans will also unlikely account for Labour's targets. A Labour government will need to ensure that it has a clear network plan to support the connection and transmission of low-carbon generation across different technologies. This will require immediately **instructing the FSO to produce a CSNP product that outlines the transmission network infrastructure needs, across vectors, for Labour's 2030 supply targets no later than the end of 2025: a CSNP2030.** This should be a joined-up process with any work that may have already begun on the current Government's spatial plan to ensure the plan provides an established needs case for planning and consenting. Notably, new 2030 projects would need to be considered within the context of existing inflight projects within existing published plans so as not to disrupt the consenting process of those projects nor create otherwise avoidable cumulative impact risks.

Stakeholders raised concerns about whether the FSO will be sufficiently resourced to fulfil its proposed remit. Already, the ESO is preparing significant recruitment drives for its expected evolution into the public body. As part of this, the FSO should consider in advance of an election how many additional system planners may be needed to produce a CSNP2030 and what wider resources may be required from TOs to support this process.

In time, it is expected that strategic plans will take account of the distribution network through a process of regional system planning (RSP) by a central body coordinated with local authorities' local area energy plans (LAEP). Notably, the function of RSP has not yet been assigned to any one body. Currently a regional system plan is unlikely to be in place much before the current price control period ends in 2028. With RSP set to begin in 2025, it will realistically play a limited role in preparing the distribution network for Labour's 2030 ambition. Currently, this is not a major concern given that the majority of investment required this decade is expected to be on the transmission network.<sup>20</sup>

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<sup>20</sup> BEIS, *Appendix I: Electricity Networks Modelling*, August 2022



However, upgrading the distribution network is critical for delivering the uptake of electric vehicles and heat pumps, as well as smaller-scale generation. Labour’s mission to accelerate the decarbonisation of transport and heat may therefore require further investment on the distribution network prior to 2028. Immediate action will also still be required from Labour to ensure that RSP is effective from 2028 by sufficiently resourcing both the designated central planning body, DNOs, and local authorities to produce system plans. Currently, 20 local or combined authorities in the UK have LAEPs.<sup>21</sup> Our engagement with stakeholders indicates that a LAEP can cost around £200,000, although some local authorities have been quoted as much as £500,000. Given financial constraints on councils, many local authorities will require additional funding to deliver their plans.

It is not entirely necessary or useful for LAEPs to be produced at a local authority level for every council in the country. The priority for producing plans at this level will be in areas that face particular supply or demand challenges and would need to plan how to integrate local energy needs to find efficiencies. The RSP body should work with combined authorities to identify those priority areas, of which we estimate could be as many as 50 local authorities. **Labour should support local and combined authorities to achieve their net zero goals by devolving funds from the Green Prosperity Plan and empowering councils to make spending decisions in line with local needs.** Where identified priority areas for LAEPs may face further funding constraints to deliver these plans, the **RSP body should co-fund LAEPs in support of its planning functions.**

#### Actions for 2030

- Instruct FSO to publish a CSNP2030 by end of 2025, in part informed by the upcoming spatial plan [DESNZ]
- Prior to election, FSO should ensure it has made sufficient resourcing plans to create the CSNP2030 [FSO]
- Set out devolved Net Zero budgets to local and combined authorities from the Green Prosperity Plan [DESNZ, HMT]
- Identify LAEP priority areas and co-fund the creation of plans where necessary [RSP]


#### Private investment and regulation

Getting to 2030 will require leveraging significant public and private investment finance across various net zero sectors. Labour has already committed to its Green Prosperity Plan pledge for £28bn of total capital spending a year by 2027. Views from stakeholders is that public financing would be most effective in supporting emerging markets and supply chains as opposed to the grid infrastructure itself, which attracts relatively stable private finance as a low risk guaranteed asset class.

Grid infrastructure is paid for through network companies (TOs and DNOs) making investments in upgrades or new lines, which are regulated by Ofgem, and then charged to

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<sup>21</sup> UK Parliament, *Local area energy planning: achieving net zero locally*, July 2023



consumers on their energy bills as ‘network costs’. In total these costs represent around 19% of a household’s energy bill between transmission, distribution, and balancing costs.<sup>22</sup> Last year, National Grid transmission network costs alone comprised £20 (3%) of an average annual bill.<sup>23</sup> Investment costs are depreciated over the longer term (typically around 45 years), smoothing out the impact of network build and avoiding high costs for consumers now.

Ofgem approves or rejects network companies’ investment plans in line with its statutory duties. Investment plans for the network largely take place through price-controlled periods of five years in which Ofgem sets the parameters for the revenue that companies can make. The current price control period is set for 2021-26 for transmission and 2023-28 for distribution. Outside of this, network companies require further regulatory approval for any infrastructure projects.

A current criticism is that this structure has not enabled more strategic investments to build where generation or demand may not currently exist but likely could in future. There is reasonable risk involved in an anticipatory approach which Ofgem would want to avoid, given that the costs associated with the investment are passed onto consumers as network costs. These risks largely include:

1. If generation (e.g. a wind farm) is not built and transmission lines are then stranded;
2. If general demand is lower than expected (e.g. lower uptake of heat pumps or electric vehicles) so new lines are used less;
3. If demand-side measures are better at lowering peak demand than expected so again, lines are used less.


The existence of a strategic network plan devised by an independent body through cost benefit analyses likely reduces these risks. Additionally, the broad consensus across stakeholders is that the risk of stranded assets, as a result of network investment this decade, is likely to be low, given the increasing role of electrification to 2050. The view is that expected higher demand over the next two and a half decades largely reduces the risk that transmission lines ‘won’t be used’. At this stage, it is unclear how further investment in the network in the context of 2030 will impact household energy bills, given that there are various interrelated costs associated with decarbonising the grid. These costs could include higher network costs from building more infrastructure, lower constraint costs from improved grid capacity, quicker delivery of lower marginal prices of renewables, and potentially lower operational costs associated with accelerated processes. For example, the estimated cost of the HND in fact delivers £2.18 annual household savings due to the reduction in constraint costs achieved by building more transmission.<sup>24</sup> Additionally, accelerating timelines for technologies beyond networks such as grid-scale storage as part of the 2030 target will also have cost implications not captured here.

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<sup>22</sup> House of Commons Library, *Domestic energy prices*, June 2023

<sup>23</sup> National Grid, ‘Your bill explained’ [Accessed 15 August 2023]

<sup>24</sup> National Grid ESO, *Pathway to 2030: Holistic Network Design*, June 2022



Ofgem has already signalled a first step towards more strategic investment through the Accelerated Strategic Transmission Investment (ASTI) framework to finance HND plans. This has been seen as a very welcome and positive step by the industry. However, our engagement indicates that further strategic investment, such as what would be needed to support further network plans (such as the HND follow up and tCSNP) as well as the CSNP2030, would require political direction from a minister. This is because the need for further investment at pace is due to the acceleration of a political target - the decision to enable that should therefore not sit with the independent regulator. **A Labour government will need to clearly set out guidance in a Strategic Policy Statement (SPS) for how Ofgem should prioritise its statutory duties including its incoming net zero duty.** The SPS should particularly provide guidance where those duties have competing impacts, in favour of network investment.

### Role of competition

There are just three network companies in transmission that hold a natural monopoly over their area. In recent years, Ofgem and the Government have consulted on opening up electricity network ownership and operation to third parties through competition to *“allow for new, innovative parties, with access to different sources of capital, to invest in network infrastructure.”*<sup>25</sup> There are generally two types of competition:

- Early-stage competition is when the tender is for the design, construction and delivery of the project;
- Late-stage competition is when the tender is after the design and planning consents have been obtained, so only for construction and delivery.

Where competition is supported, it is largely for early-stage as it provides opportunities for greater efficiencies and provides clear accountability of one party throughout the life of the project.<sup>26</sup> In the offshore transmission network, competition delivered £800 million in savings from 2009 to 2019.<sup>27</sup> However, our engagement highlights that the role of competition in delivering onshore transmission network infrastructure is still much debated across the sector, particularly in the context of achieving nearing targets.

In principle, competition in markets more broadly can bring about benefits from efficiencies (i.e. productivity gains from innovation); diversified sources of capital; and diversified business models. The argument against competition has largely centred on the limited efficiencies that can be brought about in the current context – competitive tendering extends the timeline for the initial project process which, industry stakeholders argue, contributes to slowing down delivery and adding complexity and uncertainty to the market. This is related to views that competition hinders the early certainty that is required for TOs to engage on an individual basis with a supply chain that faces global constraints and long lead-times. The understanding here is that delays would be similar for any contractor, which would negate reasons for introducing competition for the purpose of efficiencies in delivery. Recent decisions from BEIS, Ofgem, and


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<sup>25</sup> BEIS, *Competition in Onshore Electricity Networks: Government Response*, August 2022

<sup>26</sup> Ibid

<sup>27</sup> BEIS, *Impact Assessment: Extending competitive tendering in the GB electricity network*, 2019.





the Electricity Networks Commissioner have reflected this view, recommending that certain network projects are exempted from competition to avoid “*slowing progress towards energy security and decarbonisation objectives.*”<sup>28</sup> As such, all projects within the ASTI framework are uncontested for TOs. Furthermore, there is a consensus to move away from innovation and towards standardisation of design to overcome delays from procuring bespoke equipment, which we support. However, given the accelerated timeline that Labour has to deliver infrastructure by 2030, early, large-scale engagement with the supply chain is critical beyond individual TOs, with or without competition. More details on this large-scale engagement and Labour’s announced super-tender are explored in further detail under ‘Supply chains and public investment’.

Given the nature of the accelerated target, Labour needs to crowd-in significantly more capacity into the networks ‘market’ than is currently available across the three TOs. This is not only to attract more private capital and diversified sources for it, but to leverage the capacity of more businesses and workers to deliver the projects. The ASTI framework alone contains 26 projects to be delivered by 2030, split across the three companies on top of their existing price control infrastructure plans to 2026. It is unknown how many more projects will be required across HND follow-up, the tCSNP, and the CNSP2030 but views from stakeholders expressed concerns over concentrating deliverability on just three companies. Our engagement with a range of stakeholders indicates that the institutional culture across network companies is not homogeneous and that appetites towards risk vary. For TOs, delivering a higher volume of concurrent projects in the coming years than previous decades raises significant organisational challenges for their balance sheet and workforce. As such, introducing competition could enable spreading a high volume of projects across more organisation structures, bringing more capacity in to deliver the infrastructure. Notably, stakeholders highlighted the availability of private capital to invest in the networks was not the primary concern, but the ability of TOs to leverage numerous concurrent and significant projects in a short time frame.

The Strategic Policy Statement from DESNZ should also include guidance on including competition in the investment framework for unpublished network plans, such as the CSNP2030, to enable more capacity for delivering transmission. Following the publication of the SPS and the CSNP2030, **Ofgem should then design and publish an investment framework broadly modelled on ASTI but for the CSNP2030 and that includes competition.** Ofgem should consider whether it is minded to only designate a proportion of projects for competitive tender or all of them. The framework should include clear penalties/rewards for late/early delivery on target completion dates. The overall process would need to take no longer than a year, with the framework prepared and the tender launched within six months for example. Regulatory approval would then take an additional six months to be completed by the end of 2026.

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<sup>28</sup> Ibid



### Actions for 2030

- Publish Strategic Policy Statement to guide Ofgem on prioritisation of regulatory duties as well as competition for CSNP2030 investment framework [DESNZ]
- Introduce an investment framework, broadly modelled on the ASTI framework, for the CSNP2030 with competitive tendering and penalties/rewards for late/early delivery [Ofgem]
- Deliver full tendering process and approval within one year [Ofgem]

### Planning, consenting and communities

The planning and consenting system is another key blocker for delivering grid upgrades. According to the Electricity Networks Commissioner's report, network projects can spend as much as eight years in the pre-application process alone. This is before they even submit a Development Consent Order application due to extensive public consultation and onerous Environmental Impact Assessments. However, timelines can vary with some TOs reporting shorter lengths. Once the application is submitted, there are further delays in the system, whereby the time it takes for a DCO decision on Nationally Significant Infrastructure Projects (NSIPs) increased by 65% to over 4 years in the last decade.<sup>29</sup>


There are a number of bottlenecks within the existing process that are a byproduct of a process that lacks strategic oversight, applied lessons learnt, and appropriate resourcing. These bottlenecks are increasingly strained with the sheer scale and volume of projects in the pipeline.

**Strategic planning for infrastructure.** As noted above, there is currently no strategic spatial plan for delivering network upgrades that is endorsed in the planning system, though both parties have no promised it in some form. A strategic steer, by way of the National Policy Statements (NPSs) in England and Wales have also not been updated since 2011, which causes a lack of clarity among developers and planning authorities in what to include in an application and how to balance local priorities in decision making respectively. This can lead to gold-plating of applications through excessive consultation and documentation to ensure approval and avoid legal challenge. The Government's consultation on energy NPSs closed in June 2023, but it remains to be seen when the final version will be published.

**Joined-up processes across GB.** Differences between the English and Welsh planning process compared to the Scottish process means that public enquiries are more easily triggered in Scotland, leading to delays. Whilst planning is devolved, the legislation underpinning it (Electricity Act 1989) sits with the UK government to make amendments. This will likely become even more of a bottleneck as more transmission projects are built across the border

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<sup>29</sup> DLUHC, *Nationally Significant Infrastructure: action plan for reforms to the planning process*, February 2023.



to connect Scottish power to southern demand centres. The 137-mile Beaully-Denny power line connecting remote wind farms in Scotland to the national grid faced fierce local opposition with over 17,000 objections and a three-year public enquiry before achieving approval in 2010. The line was not completed and fully operational until 2015.

**Learning from previous developments.** Evidence for Environmental Impact Assessments are collected on a project-by-project basis with multiple surveys that reach the same conclusion being repeated for similar technologies or projects. This creates a cumbersome process with very little learning transferred from project to project.

**Public awareness and understanding on the need for network infrastructure.** Too much of public consultation time is dedicated to demonstrating the need for net zero and renewables, let alone on the route or visual mitigations of the infrastructure itself. In addition, as a result of outdated policy guidance, there is a lack of clarity among communities on what they can influence through the consultation process, from the route of the power lines to whether it is taken underground or offshore. A narrower and deeper approach to public consultation would be more beneficial.

**Resourcing in local planning authorities and statutory consultees.** Delays in decision making are in large part due to lack of resourcing. The proportion of planners working in the public sector rather than the private sector fell from 70% in 2006 to 56% in 2018.<sup>30</sup> While it is not clear where exactly planners move to, the data goes some way in reflecting stakeholders observations that given the importance of obtaining planning permission (and obtaining it as quickly as possible) developers and independent consultancies are attracting planners to ensure their own applications are passable. Stakeholders also raised concerns about the timeline impacts of negotiating planning performance agreements with local planning authorities, which is a consequence of a more uncertain funding model.

The Electricity Networks Commissioner's report sets out clear recommendations on how to shorten the current process of planning and consenting, and addresses the critical bottlenecks highlighted above to varying degrees. These have been broadly welcomed by industry and political stakeholders. The current Government has yet to commit to any detailed recommendations beyond the establishment of a strategic spatial plan and "*speeding up planning for the most nationally significant projects.*"<sup>31</sup>

The recommendations would reduce the timeline for consultation, planning and consent down to three and a half years (with two and a half years spent in pre-application and approval). By the time a new government is instated, existing HND projects could likely have completed or near-completed optioneering and will need to be supported by accelerated processes for consenting within a maximum of two and a half years. Any new plans set out in the HND

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<sup>30</sup> DLUHC, *Nationally Significant Infrastructure: Action plan for reforms to the planning process*, February 2023.

<sup>31</sup> Prime Minister's Office, 10 Downing Street, 'PM speech on Net Zero: 20 September 2023', 23 September 2023

follow-up, tCSNP, and CSNP2030 will need to achieve consultation and consent in around 18 months.


**Timeline of the consenting process with the Electricity Networks Commissioner's reforms**

Needs case	Optioneering	Consult, Prepare DCO & Land Rights	Planning application examination & decision
← 3 and a half years with concurrent phasing →			
		← 2 and a half years →	
	<b>2 years</b>	<b>18 months</b>	<b>1 year</b>
Needs case identified in spatial plan	Corridor routing automated and route design standardised	Streamlined environmental data collection and public consultation	A fast-tracked approval process

Source: Electricity Networks Commissioner's recommendations, August 2023

Key recommendations include:

- **Pre-application:**
  - Standardisation of route design to ensure engagement with communities hosting infrastructure is focused primarily on the choices they can influence.
  - A data sharing platform introduced by the FSO across spatial, environmental, economic, social, technical, and commercial data. This is particularly meant to reduce duplication in Environmental Impact Assessments across projects.
- **Planning process:**
  - Bring the Scottish Planning process in line with England and Wales to remove the automatic requirement for a public local inquiry when a planning authority objects. This requires amending the Electricity Act 1989 in UK Parliament. While the report does not highlight specific lines of the legislation, Scottish Renewables have similarly called for reform, referencing Section 36 of the Act.
  - A twelve month fast-track approval process for approving transmission infrastructure, supported by increased standardisation.
  - Regularly update National Policy Statements (NPS) and National Policy Frameworks (NPF) every five years, with smaller updates allowed in between. NPS/NPFs should refer to and allow the endorsement of specific network plans and design principles.
  - Address resource shortages through a national review to identify skills gaps and actions required to address them. Launch a national campaign on the need for jobs across electricity networks.
- **Community support**
  - Publish guidance on how communities should directly benefit from hosting infrastructure.
  - Launch a government-led national information campaign on the need for electricity infrastructure.



The recommendations above are necessary to significantly accelerate the current process of planning and consenting of transmission infrastructure, and should be pursued to support projects current in flight, such as in the HND. However, for plans not yet published, **a Labour government would need to go even further, reducing the whole consenting process down to around 18 months.** As such, many of Winser's recommendations form the basis of a programme of reforms that a Labour government would need to implement. If the current Government has not made progress on relevant recommendations before a general election, Labour will need to consider moving quickly to ensure reforms are in place.


Accelerating this process will require reducing opportunities for community input even further, streamlining environmental assessments and fast-tracking approval. Development of the CSNP2030 should include conducting a Strategic Environmental Assessment, which requires public consultation, and would be endorsed in the NPS/NPFs. Taken together, these steps should form the basis of an established needs case for projects within the CSNP2030, which does not need to be scrutinised at planning examination, therefore saving time and effort for approval. **Within the first six months of a new government, planning and legal experts in DEFRA, DLUHC and DESNZ should identify the minimum viable route to enabling the approval of the CSNP2030 within 18 months.** This review should consider the Secretary of State calling the CSNP2030 or individual projects within it. Our engagement with stakeholders indicates that this route could be based on the following principles and actions:

- Standardised routing would need to be employed with minimal consultation (e.g. one round of four weeks) to identify significant risks or errors, and communities should be well briefed on what routing and visual mitigations options are subject to consultation. How far undergrounding, for example, is open to debate for a community would be based on the standardised design principles and the cost benefit analysis that underpins the CSNP2030. The Electricity Networks Commissioner's implementation timeline indicates the full automation of routing may not be in place until the end of 2027. For Labour, this technology will need to be accelerated to the end of 2026.
- A streamlined environmental assessment would then need to occur within six months – proposals in Britain Remade's PowerBook report indicate that the current Government's proposed Environmental Outcomes Report (EOR) could be completed in one year.<sup>32</sup> To accelerate this process further, Labour should consider where individual surveys completed on a project-project basis can be reduced or removed. As part of DEFRA's data sharing platform recommended in the Electricity Networks Commissioner report, the department should consider creating average values of existing survey data across archetypes of terrain. These values should then be used where possible across projects that feature in the CSNP2030, rather than collecting new data.
- An ultra-fast-tracked approval process will need to shorten the DCO process even further from 12 months to six months after submission. Given that projects within the CSNP2030 would have an established needs case, planning authorities should review technical details minded to approve applications unless there are substantial social or

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<sup>32</sup> Britain Remade, *PowerBook*, March 2023





environmental concerns. This decision-making should be supported through clear guidance from a National Policy Statement (England and Wales) or National Policy Framework (Scotland). Even without local politics, this timeline is a best-case scenario which depends on a Labour government providing sufficient resourcing to local planning authorities to address skills shortages. Where that is likely to not be achieved in time, Labour will need to consider accelerating approval by calling in projects within the CSNP2030 for Secretary of State approval.

The recommendations above raise key institutional and political challenges for a potential Labour government. First, accelerated timelines will put even greater strain on planning and consenting authorities with existing skills shortages. Second, communities and environmental groups will have less say over what is built in their local area. The section below considers how Labour might address these challenges.

### Addressing skills shortages

Resource constraints in planning authorities is not a new phenomenon nor is it specific to planning alone - local authorities more generally saw a £15bn real terms decline in funding from 2010 to 2020.<sup>33</sup> As such, spending on planning functions declined by 38% between 2010/11 and 2017/18 and staffing numbers fell by 13% in that same period.<sup>34</sup> Last year, the Scottish government projected that if recruitment needs were not met, there is a “*real danger that Scotland’s planning authorities will simply not have the skills, resources and staff hours available to deliver a high-quality, functioning planning system*”.<sup>35</sup>

Retention is the biggest challenge with local planning authorities reporting unmanageable workloads and overstretched workers. In May 2023, the Royal Town Planning Institute (RTPI) found that while public sector planners were in decline, the private sector saw an 80% increase in the number of employed planners. Their analysis largely puts this down to funding with 68% of local authority planners saying that competitive salaries are a key issue.<sup>36</sup> Planners are critical to supporting the delivery of significant infrastructure projects required to get to 2030 from network projects to generation and storage, as well as Labour’s broader goals of building 300,000 homes per year.

Currently the RTPI offers a two-year course to upskill graduates from qualifying subjects to become an accredited town planner alongside working with registered Licentiates. **In order to meet resourcing needs more quickly, the Department for Education (DfE), DEFRA, DLUHC and the RTPI should conduct a six-month review to halve the time it takes to qualify as part of a one-year accelerated PlanFirst programme with lessons learnt from TeachFirst.** As part of this review, relevant bodies should identify further qualifying degree or apprenticeship subjects. Additionally, the review should identify and split out tasks that could be completed


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<sup>33</sup> LGA, *Local government funding in England*, March 2020

<sup>34</sup> National Audit Office, *Planning for new homes*, February 2019

<sup>35</sup> RTPI, *Future Planners Project Report*, July 2022

<sup>36</sup> RTPI, ‘Local Authorities struggle as over a quarter of planners depart’, 16 May 2023



with a suitable prerequisite qualification but without a RTPI accreditation, such as reviewing ancillary application documents, modelled off the role of a paralegal. The review should also consider how the programme could support statutory nature consenting bodies (SNCBs) in addressing staffing constraints as well. The programme should include a recruitment campaign to increase the attractiveness of the profession with lessons similarly learned from Get into Teaching campaigns.

In the short term for planning specifically, greater resourcing could come from expanding the size and scope of the Planning Delivery Fund to support authorities that require extra capacity to handle energy infrastructure applications, as well as new housing. The Royal Town Planning Institute estimates that there is a funding gap of £80 million per year to get planning teams back to their funding levels in 2009.<sup>37</sup> Labour has promised further resourcing to local authorities to hire 300 planners through a new stamp duty surcharge on non-UK residents, which could be directed here.<sup>38</sup>

In addition to better resourcing of local planning departments and SNCBs, some consenting processes for energy infrastructure will require highly specialist skills. To support this, Labour could create a 'flying squad' of specialist planners, with a home base within DLUHC. This team will ensure that institutional knowledge about best practice and technical innovations is not lost between projects and enable the deployment of technical expertise efficiently as required.

### **Public support**

Local opposition for new transmission infrastructure is already a critical challenge for expanding grid capacity. This is particularly the case in rural communities such as East Anglia that are set to host more power lines and substations to bring new offshore wind and nuclear power online.

Previous polling conducted by Public First for Onward found that transmission lines are the most unpopular type of similarly nationally significant infrastructure, as shown in the chart below. Net support (31%) for overhead cables and pylons is marginal (30% oppose), even compared to support for new homes (44%) – see chart below. Opposition to the infrastructure typically relates to the visual impacts of overhead cables – the polling found that two-thirds (66%) of voters felt powerlines would look unattractive.

As highlighted in Onward's report, mitigation requests from local opposition groups to build cables underground or offshore are costly, ranging from five to ten times as much in construction. Offshore cables are also expensive to maintain, making projects such as National Grid's East Anglia GREEN cable up to thirty times more expensive. These costs would rise into the hundreds of billions which would be recuperated through household energy bills.<sup>39</sup>

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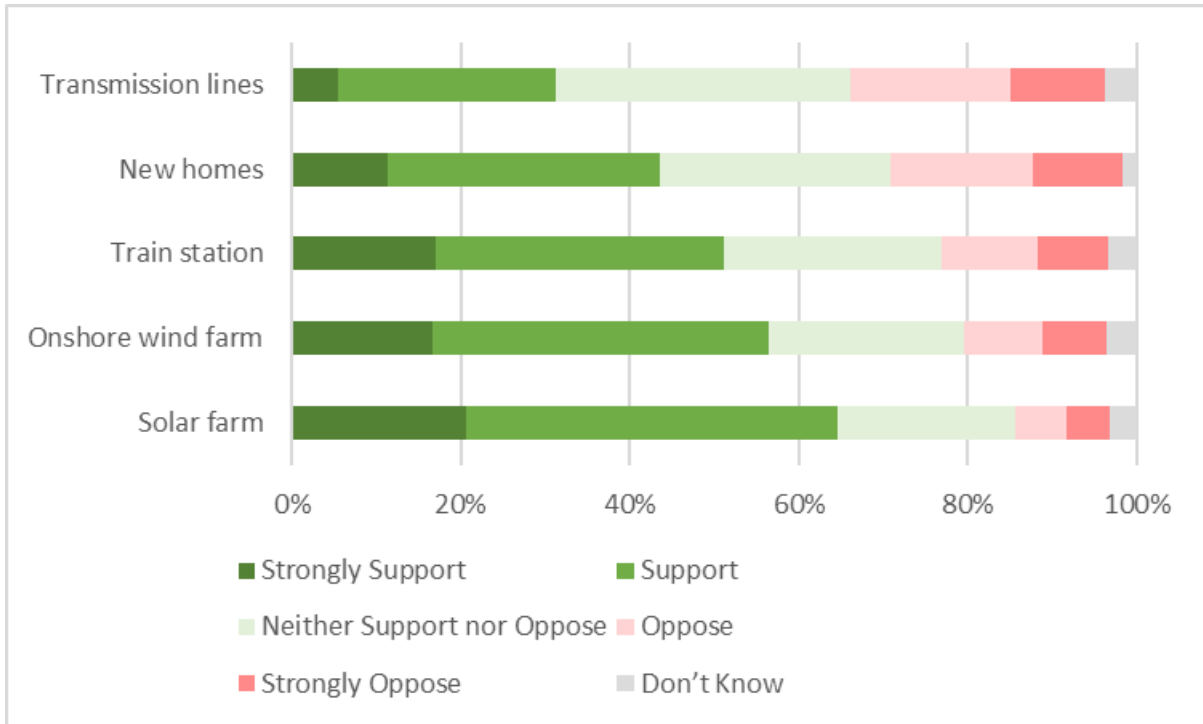
<sup>37</sup> Royal Town Planning Institute, *Resourcing Public Planning*, July 2019

<sup>38</sup> Labour's planning promises: the sector reacts, *Planning Resource*, October 2023

<sup>39</sup> Onward, *Power to the People*, July 2023



### Public support/opposition for plans to build the following within 3 miles of their home



Source: Public First polling for Onward<sup>40</sup>

Britain is not alone in the local politics of pylons. Following public opposition, Germany introduced legislation in 2015 to give priority to undergrounding transmission lines. At the time of the decision, it was expected to cost €3-8bn more for 1,000km.<sup>41</sup> While this will have likely had political benefits, Germany now faces another challenge – a 5.7 million-km underground tangle of cables and pipes that is delaying more infrastructure rollout.<sup>42</sup>

Innovation in pylon design has led to shorter, sleeker T-pylons installed around Somerset for Hinkley Point C. There is limited evidence as to whether the newer pylons are more or less supported than traditional ones in the communities themselves. Local media in Somerset indicate mixed views with some appreciating the new design for its higher-voltage capacity and aesthetic, while others still referred to the pylons as an ‘eyesore’.<sup>43</sup> More dated polling from YouGov of British adults found that in 2015, 59% viewed the T- pylon design positively compared to 36% for the traditional lattice pylon.<sup>44</sup>

Local opposition to transmission infrastructure raises difficult trade-offs for any political party to balance democratic voice with the national interest. Although, those challenges also differ between political parties. Electorally, Labour is less vulnerable to local opposition in the areas where key transmission infrastructure will likely be built, compared to other parties. Public First


<sup>40</sup> Public First, ‘Power to the People: New polling for Onward’, 24 July 2023

<sup>41</sup> Federal Ministry for Economic Affairs and Climate Action, FAQs Grids and Grid Expansion

<sup>42</sup> Bloomberg, ‘Underground Tangle of German Wires Drags \$1 Trillion Green Push’, 6 May 2023

<sup>43</sup> North Somerset Times, ‘Residents react to new T-pylons between Bridgwater and Loxton’, 28 March 2023

<sup>44</sup> YouGov, ‘First new pylon for 90 years a hit with voters’, April 2015



analysis of data shared by the ESO indicates that of the 36 UK parliamentary constituencies impacted by the HND plans, just one is a currently held Labour seat while three more are former Red Wall seats that voted Conservative in 2019.<sup>45</sup> Four of the impacted parliamentary constituencies are currently SNP seats. Alongside amendments to the Scottish planning system, Labour will face particular political challenges north of the border. Scotland is critical to achieving any net zero power targets both in generation and transmission, but for Labour to do so by 2030, it will need to clearly demonstrate this importance to the Scottish electorate.

Furthermore, Public First polling for Onward highlights that prospective Labour voters have slightly higher (36%) support for overhead lines within 3 miles of their home compared to those who are likely to vote for the Conservatives (31%) or Liberal Democrats (28%) in the next election. Irrespective of party politics, achieving the 2030 target will test public support to new bounds with significantly more infrastructure needing to be built in shorter timescales with less community input. Decarbonising the grid is of critical national importance – as is sustaining political support for achieving net zero more generally. Labour therefore faces the challenge of preparing the public for a sprint to 2030 while not undermining the marathon to 2050.

Two key policies that will be required here are a community benefit scheme and a Government-backed public information campaign. Getting the design of these right is critical and should be underpinned by robust public opinion research.

Based on our engagement with industry, key principles of a community benefit scheme are that it should be fair across affected communities and that local people should be able to decide how funds are spent. The Irish EirGrid approach for community benefit is a useful model here that Labour should replicate – the scheme becomes live once a project receives planning permission with staged, standardised payments to a Community Fund. How the fund is spent is decided by a Local Community Forum with representatives from a range of local stakeholders and wider organisations through their own established community benefit strategy.<sup>46</sup>


The Government has recently consulted on guidance for the design of community benefit, however the response has not yet been published. Labour will need to consider whether the Government's upcoming guidance is in line with the EirGrid model detailed above, and whether it will require updating. If so, **new community benefit guidance should be published in the first six months of a new parliamentary term. Community benefits should also be included as automatically obligatory for transmission infrastructure within the National Planning Policy Framework.**

As highlighted in the Electricity Networks Commissioner's report, a Government-backed public information campaign is critical for explaining the need to build more transmission infrastructure, and the positive externalities of doing so for the nation. It is vital that the messaging of this campaign is effective with the public and is grounded in opinion research. National Grid recently launched its Great Grid Upgrade campaign which is a positive start for

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<sup>45</sup> Kanagasooriam, J., & Simon, E. (2021). *Red Wall: The Definitive Description*. *Political Insight*, 12(3), 8-11.

<sup>46</sup> EirGrid, *Community Benefit Policy*, 2022



the industry, however, there is a need to develop this further. First, National Grid's campaign includes key messages on clean power, energy security, and co-benefits (such as jobs and economic growth).<sup>47</sup> While energy security has cut-through with voters, research from the Global Strategic Communications Council indicates that messages that focus on creating a better planet for younger generations are in fact more impactful than messages on co-benefits.<sup>48</sup> We believe there is a need for further public opinion research here to test the most effective messages to use for a public campaign. Second, an effective campaign will need to have much greater reach, delivered by politicians, to demonstrate its importance. Where possible, positive lessons should be learned from government messaging during the pandemic.

#### **Actions for 2030**

- If not already done, implement the Electricity Networks Commissioner's recommendations on planning and consenting reform to accelerate the delivery of existing network plans such as the HND. [FSO, Ofgem, DESNZ, DLUHC, DfE, TOs/DNOs, No.10, Scottish & Welsh governments]
- Launch six-month review of how to reduce planning and consenting timelines for CSNP2030 to 18 months, down from three and a half in the Electricity Networks Commissioner's plan. The review should consider using Secretary of State powers to call-in the CSNP2030 or certain projects within it that pose risk of delay.
- Address funding pressures on councils through longer term devolved funding settlements. [HMT]
- Review and launch an accelerated RTPI accreditation for a one-year PlanFirst programme. [DfE, DEFRA, RTPI]
- Publish community benefits guidance for transmission infrastructure in line with EirGrid's policy. [DESNZ]

### **Supply chain and public investment**

The next critical phase of delivering transmission infrastructure is to build, fast. Industry views indicate that the minimum time required for construction is two and a half years - but first, Labour will need to introduce bold policies to overcome key challenges within the supply chain to procure the necessary materials and meet the skills needs. Stakeholders highlighted that the supply chain poses the greatest risk to missing the 2030 target with current lead times of five to seven years.


Network companies in Britain are largely reliant on manufacturers abroad for key materials such as high-voltage cables, transformers and switches. Already, these supply chains are increasingly constrained with competition from other major economies also racing towards decarbonisation. To add to this, readying the transmission network will involve securing even longer cables and 50% more grid and bulk supply substations.<sup>49</sup>

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<sup>47</sup> National Grid, *The Great Grid Upgrade*, 2022

<sup>48</sup> YouGov polling of 1,896 GB Adults, 21<sup>st</sup>-24<sup>th</sup> October 2022. [Link to data tables.](#)

<sup>49</sup> BEAMA, *Growing the supply chain for a net zero energy system*, March 2022



There are several ways in which the process for delivering transmission infrastructure could better support earlier engagement with the supply chain. The sequencing of five-year investment cycles and bespoke equipment design means that TOs have generally booked manufacturing capacity on a project-by-project basis. Stakeholders also warned that specifications for equipment in Britain also tend to differ from European countries, requiring manufacturers to book bespoke orders. This not only means that TOs are engaging with manufacturers at a relatively late stage, but it also further reduces the size of their purchasing power compared to international competitors. By comparison, the Dutch national transmission system operator TenneT recently awarded a €5.5 billion mega-contract to a consortium of cable companies to supply and install nearly 5,000 km of high-voltage across Germany and the Netherlands.<sup>50</sup> While Britain no longer has a nationalised grid, it is important to learn lessons from where state involvement can benefit early and decisive action in securing supply chain capacity.

Overcoming key supply chain constraints will require a Labour government to build in more certainty and collaboration into transmission procurement than currently exists. The Electricity Networks Commissioner's report and recommendations go some way to address these challenges. Winser recommends booking as much bulk purchase equipment as possible, rather than a project-by-project engagement strategy, enabled by strategic network plans and new equipment design standards across GB projects and in line with European standards. These recommendations are useful. The Electricity Networks Commissioner's report puts the onus on TOs and, as a result, recommends against competition for delivering projects so that TOs have enough certainty for early engagement. But with lead times for materials about as long as the time Labour would have to deliver and commission upcoming network plans, more ambitious action will be required than is possible on an individual TO basis. A Labour government will need to use its power as the state to lead engagement with existing supply chains abroad and invest in scaling new supply chains in the UK.


The industry is extremely supportive of the need for domestic supply chains to derisk project timelines from geopolitical disruption and to onshore the economic benefits for British communities. However, stakeholders had mixed views on how far domestic manufacturing could contribute to 2030, highlighting that it would depend on the level of ambition from a government to incentivise production. For example, Scotland has already seen recent growth in HVDC subsea cable manufacturing - XLCC's plant in North Ayrshire is set to be commissioned in 2026 while Sumitomo is in the planning process to confirm £200m of investment in a Highlands factory.<sup>51</sup> **Labour should use money from the Green Prosperity Fund to crowd in planned private investment and scale UK HVDC cable manufacturing.** First, Labour could call-in the planning approval of any existing applications for cable plants by the Secretary of State. Next, funding from the existing pledge should be used to accelerate the commissioning of plants under development to begin production from mid-2025 where possible. Funding should then be used to underwrite the cost and risk associated with

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<sup>50</sup> TenneT, 'TenneT awards mega contract for high-voltage AC cables in the Netherlands and Germany to eight partners', 10 August 2023.

<sup>51</sup> SCN, 'Sumitomo earmarks Nigg for £200m subsea cable factory', 18 May 2023; The Scotsman, 'Ayrshire cable plant that could support thousands of jobs gets full green light', 25 May 2023.





expanding manufacturing capacity to meet a designated proportion of the cabling needs across projects in the HND (where supply chains have not been booked) and upcoming network plans, including HND follow up, tCSNP, and the CSNP2030. This should include underwriting the cost and risk associated with expanding manufacturing capacity. An estimated target for the cabling needs will need to be set immediately to inform the factory's commissioning needs and to inform what further materials are required to procure elsewhere. **Further financial incentives should also be introduced to encourage existing OEMs to invest in scaling the UK's manufacturing capacity in line with equipment needs.**

**Labour has also announced efforts to enable early, large-scale engagement with the supply chain by coordinating transmission operators through GB Energy to launch a super-tender for procurement.** To make this work, this exercise should comprise a super-consortium of industry leaders, including TOs, to inform and guide the process of a government-backed bulk booking initiative for reserving bulk manufacturing capacity. The bulk booking initiative should include specifications for standardised equipment in the CSNP2030 as well as any unmet equipment needs from projects in earlier strategic network plans. Labour will need to reserve capacity in advance of projects being awarded through competitive tender, therefore providing the guarantee on the reservation order, with TOs and contractors providing the procurement payment instalments at a later date. This process should begin prior to the election - Labour should start with the principles of the TenneT approach and engage with procurement professionals, TOs, contractors and manufacturers on what might need changing, as well as FSO and Ofgem on new equipment standards. Once in government, Labour should launch the super-consortium and the bulk booking initiative overseen by the Cabinet-level minister for achieving 2030 to enable co-ordinated, swift delivery.

Throughout our engagement with industry, skills concerns for construction were regarded as a second-order bottleneck given the significant challenges facing procuring equipment. However, it will be critical that contractors are supported by a skilled workforce to deliver projects on time. Network plans will go some way to inform the skills needs for 2030, which will enable contractors to plan for recruitment and upskilling. A full skills package is beyond the scope of this report, but Labour should ensure that its education and skills plan reflects the needs of net zero industries and the recommendations put forward by the Green Jobs Taskforce.

#### **Actions for 2030**

- Implement equipment standards in line with Europe [DESNZ, FSO, Ofgem, TOs]
- Call-in planning permission for cable plant applications [DLUHC]
- Use Green Prosperity Fund to crowd in planned private investment and scale UK HVDC cable manufacturing, underwriting the cost and risk of increasing capacity of new and existing cable plants [DESNZ, HMT]
- Introduce financial incentives for new and existing firms to invest in UK manufacturing for specified equipment [DESNZ, HMT]
- Launch a super-consortium of industry leaders and a bulk booking initiative to provide a government guarantee on early reservation of supply chain capacity [DESNZ, FSO, Ofgem, TOs, contractors]






## Connecting generation to the grid

The final stage of commissioning generation sites is connecting them to the grid. In order to do so, developers must first submit an application to join a queue where they wait for a connection agreement. The connections queue has received increasing attention in recent months with waiting times reaching as much as 15 years. The capacity of the transmission network plays an important role here – bringing generation sites online requires there to be a certain level of grid infrastructure to connect to. However, long wait times are not just due to transmission capacity; the connection process itself requires reform. While Labour could build overhead cables up and down the country from Suffolk to Scotland, it will not meet its 2030 ambition if renewable projects are sitting in a queue.

The key issues here are that the current queuing process for grid connection is based on a first-come-first-serve, technology-neutral system, with low barriers to entry and a lack of contractual obligation for the developer. This has resulted in ‘zombie’ projects that have not met significant consenting milestones holding up the queue. Penalties for leaving the queue also mean that it is in a developer’s interest to take limited action, while National Grid ESO has limited tools to enforce meeting milestones, although proposals to implement queue management measures have been proposed by industry and are awaiting approval by Ofgem. At an aggregate level, there is sufficient low-carbon generation capacity and storage in the queue (350GW) to meet the c. 200GW modelled in Ember’s 2030 scenario, with at least 83GW already connected.<sup>52</sup> However, as highlighted previously, there is a question of whether it is the right type of generation, and if the projects themselves are even viable. National Grid ESO estimates that 70% of projects in the queue may never be built.<sup>53</sup>

ESO recently launched its five-point plan to tackle some of these issues offering amnesty for developers to leave the queue without incurring penalties; adding milestones to agreements so ‘zombie’ projects are more easily identified; improving oversight over the queue; and accelerating storage projects to connect quicker with non-firm offers. Since the launch of the five-point plan, ESO has gone further to set out plans to remove stalling projects and provide support for developers to build their own connections to the grid. Thus far, Ofgem-approved amnesty agreements have freed up 8GW of capacity, representing around 3% of the queue.<sup>54</sup> Industry stakeholders have argued for further action to implement improved queue management measures and raising entry requirements, which would require code changes for the ESO/FSO approved by Ofgem. With lots of work ongoing in this space, Labour should ensure reforms are applied consistently to the entire pipeline of projects and ensure that where a project cannot connect, it does not hold up others.

Some industry stakeholders have also called for more market-based options, such as private agreements to trade grid connections or to share connection points through co-location. While more efficient use of the existing grid and connection points should be implemented, there is an underlying tension here between a strategic central planning approach and a market-based approach that needs to be considered in the context of the 2030 target.



Getting to 2030 requires strategic planning to ensure networks and generation are built in coordination. Currently, stakeholders indicated that the HND largely considers the Future Energy Scenarios with the connections queue in scope but playing a limited role. The upcoming CSNP is expected to be more influenced by the connections queue for a more joined-up approach. The risk of enabling too many market-based options is that in such accelerated timelines, planning for the network becomes a moving target. As a result, there needs to be a clearer visibility between the connections queue (and any reforms to it) and designing any upcoming network plans.

Under a Labour government, the FSO could review the connections queue and identify critical projects for achieving 2030 but currently have a post-2030 estimated connection date. Projects with a connection date prior to 2030 that are deemed less critical to the national mission would also be identified. Similar industry recommendations for prioritising 'critical projects' have suggested criteria could be aligned with the government's sector deals to qualify as strategically important for net zero, or where broader economic value could be greatest.<sup>55</sup> Any evaluation would require clear and transparent criteria decided upon and set out by the FSO and Ofgem.

The FSO could then consider how far co-location between the two sets of identified projects could enable a fast-tracking of critical generation. Where this is not possible, careful consideration will be required to ensure investor confidence is not hampered. Less critical projects could be offered non-firm connection agreements and a mitigation payment paid for by the fast-tracked developer to trade places.

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<sup>52</sup> National Grid ESO, TEC Register [Accessed 15 September 2023]. Ember, *A path out of the UK gas crisis*, September 2022

<sup>53</sup> National Grid ESO, *Connections Reform*, June 2023

<sup>54</sup> Ofgem, 'Letter of support to facilitate the processing of the TEC Amnesty', 15 August 2023

<sup>55</sup> National Grid, *Delivering for 2035*, May 2023



## Minimising the network challenge

Achieving the twin goals of significant electrification of the UK at the same time as shifting to decentralised, renewable energy generation will involve building a massive amount of infrastructure. At the most basic level: new sources of power must be connected to the grid, and grid connections to homes and workplaces will need to be upgraded so that they can power cars and heating.

As this report highlights, transmission alone presents a significant challenge. National Grid has estimated that meeting the current Government's 2035 target for grid decarbonisation will involve building over five times more new transmission lines by 2030 than have been built in the last 30 years.<sup>56</sup> Under Labour's 2030 target, and accepting that any reforms will still require some time for planning, consultation and contracting, much of this will need to be built in the span of two or three years.

But the size of this challenge is not fixed. If Labour is to succeed in decarbonising the grid by 2030 it will need to think not only about how to speed up the building of pylons and substations, but also about all of the ways in which it can minimise the need and stress on the system while maintaining a reliable and green grid.

While it is beyond the scope of the report to provide a full policy portfolio here, there are three primary ways in which this can be done:

- Making pragmatic decisions about what 'decarbonisation' really means in practice;
- Reducing overall power needs by driving energy efficiency; and
- Reducing peak strain on the transmission network through flexibility and energy storage options.

### Defining decarbonisation

Labour's 2030 decarbonisation target is underpinned by modelling from Ember. That model assumes that our 'green' grid will include 1.2% gas, half of which would be fitted with carbon capture and storage (CCS) technology, allowing the emissions to be captured and stored permanently in geological formations.<sup>57</sup> This is a sensible decision that creates additional security and flexibility in the system.


Rollout of carbon capture technology has moved in fits and starts over the past decade but is now accelerating. If current plans for a decarbonised grid can withstand a small proportion of gas with CCS, it seems pragmatic that we could accept a higher volume of gas within the system - providing that it is fitted with carbon capture. By, for example, allowing up to 5% of the UK's electricity in 2030 to be powered by gas (down from 38.5% in 2022<sup>58</sup>), Labour would significantly reduce our exposure to international energy prices and reduce the volume of fossil

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<sup>56</sup> In England and Wales. National Grid, *Delivering for 2035*, May 2023

<sup>57</sup> Ember, *A path out of the UK gas crisis*, September

<sup>58</sup> National Grid ESO, *Britain's Electricity Explained: 2022 Review*, January 2023



fuels going into our grid, while still reaping the benefits of gas power stations with their existing connections to the grid.

This approach would be politically beneficial as it provides additional reassurance for critics concerned about resilience in the energy system and it would spread some of the pressure on building new infrastructure: we would reduce the need for new connections and instead require different specialist building skills in the construction of CCS facilities. This is good for the economy and spreads the risk of delays across a greater number of industries. Investing in CCS technology has the upside risk of providing green jobs for workers in oil and gas industries and in politically salient parts of the country. This plan also makes the most of the UK's geological advantages in this sector: not every nation has suitable rocks for storing carbon permanently.

National Grid ESO's most ambitious scenario suggests that the UK's energy mix could include 1.8 GW of installed gas with CCS by 2030, which would represent approximately 1% of installed capacity. However, we note that the government has already entered negotiations with one gas with CCS project as part of the carbon capture cluster program. This project alone would provide almost half of that capacity, and two new carbon capture clusters have recently been announced. **A Labour government could give precedence to energy generation within the project funding round of the new clusters to increase the proportion of gas with CCS available by 2030**, aiming to increase the level of gas with CCS within the mix, without increasing the proportion of unabated gas.

This recommendation has the advantage of being relatively easy to action: the pathway to fund these projects already exists, as do the companies to build them. It is also scalable: achieving 3% of gas with CCS would be an achievement that boosted British prowess in the nascent CCUS sector and kept more pre-existing low-carbon dispatchable power on the grid, 5% would be brilliant - but even if we only reach the ESO scenario level, that will still be a good thing.

### Reducing demand


Labour's rhetoric on decarbonisation has been emphatically pro-growth. In centuries past, that would have implied a proportionate increase in demand for energy - and strain upon the grid. However, the experience of developed nations over the past decade shows that growth and energy use can be decoupled. Key to this is efficiency. National Grid ESO's Future Energy Scenarios shows that even with significant additional electrification of homes - and a growing population - it is feasible that consumer energy demand could fall to half of the current level due to increased energy efficiency and behaviour change.<sup>59</sup>

Consumers and businesses play a key role in adoption of better technologies (past examples include LED light bulbs and more efficient gas boilers), but the Government holds vital levers that can accelerate the pace of change. A Labour Government serious about grid

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<sup>59</sup> National Grid ESO, *Future Energy Scenarios*, 2023





decarbonisation will also need to be serious about insulating lofts, installing triple-glazing, and converting homes to low-carbon heating.

**Labour has already announced their Warm Homes plan - “£6bn a year for 10 years to give families grants and loans to upgrade the energy efficiency of their homes”<sup>60</sup> - and this will need to be heavily front-loaded, with serious workforce and supply chain planning to ensure that benefits are recouped before 2030.**

Building standards will also need upgrading rapidly to update minimum energy efficiency performance targets and reduce emissions in line with net zero targets. Following consultation, the current Government is set to publish the Future Homes Standard next year to be legislated in 2025. Given the timeline of the current parliamentary term, it is likely that this may not be implemented prior to a potential Labour government. As such, **Labour will need to pass the Future Homes Standard immediately.**

And finally, devices and technology. In the nineties, the average gas boiler was only 60% efficient - any boiler installed today must have an efficiency of at least 92%. This leap was made possible by the introduction of condensing gas boilers 15 years ago but also by clear and increasingly ambitious government regulations. This is an example that a Labour government should emulate across all regulatory functions.

It is exciting to note that many of these interventions will also improve quality of life for the British people and therefore have the particular virtue of being both essential and politically feasible.

### **Demand side flexibility**

Above and beyond the overall energy needs of the country, planning for our electricity grid is dominated by the peak (or maximum) requirement. Planners are understandably preoccupied with making sure that the grid will not collapse when we need it the most - and when most of us need it. Inevitably, this means that the infrastructure carrying the UK's electricity is built to carry a much higher load than it generally bears. Therefore, while lowering the overall energy need of the country is beneficial, we can also significantly reduce the volume of energy infrastructure required by lowering *peak* demand. Developing tools that help to shift and smooth demand has the additional benefit of reducing the costs of energy for all consumers by reducing the use of highest cost generators and offering homes and businesses cheaper electricity when renewable power is plentiful. Ember's modelling for the 2030 target accounts for 10GW available for demand side response but using 2GW in peak.<sup>61</sup> However, households and businesses need to be supported and enabled for such assumptions to be achieved. Here too there are multiple levers that governments can pull, not least:

- Support accelerated rollout of smart meters to enable market wide half-hourly settlement;

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<sup>60</sup> The Guardian, 'Labour's plan to insulate more homes 'would create 4m job opportunities'', 9 July 2023.

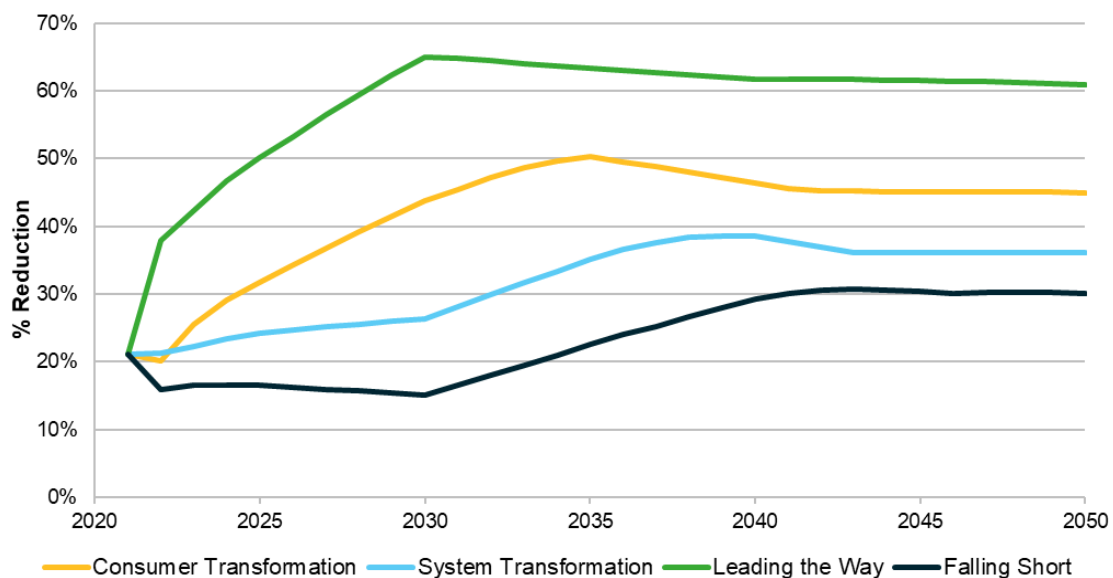
<sup>61</sup> Ember, *A path out of the UK gas crisis*, September 2022

- Measures to drive uptake of heat pumps, thermal stores and batteries - including vehicle to grid (V2G) technology;
- Increased support for, and investment in, large scale energy storage
- Building interconnectors.

The UK is in the process of shifting away from a system under which the energy use of customers is tallied on an irregular basis and then estimates are made of when the energy was used. The new system ('market wide half-hourly settlement') will allow billing to be more accurate and timely but - more importantly for our purposes - it will also act as an enabler for new products and services, making it simpler for consumers to charge their car when there is plentiful cheap wind energy, or to see when it would be a good idea to run their house off the car battery because electricity is expensive. Ofgem estimate that market-wide half-hourly settlement will benefit British consumers by between £1.6bn and £4.5bn over the period 2021-2045.<sup>62</sup>

Suppliers can already choose to use half-hourly settlement through an elective process, but full rollout has been delayed by delays to the back-end architecture of the system and a slower than hoped rollout of smart meters to consumers. **An incoming Labour Government must make clear that further delays will be unacceptable and ensure that consumers gain the benefits by putting additional pressure on smart meter deployment and reforming energy bills to ensure that there are strong enough incentives for consumers to change their behaviour.**

#### Reduction in unmanaged peak demand for EV charging due to smart charging




Source: ESO, *Future Energy Scenarios, 2023*<sup>63</sup>

Once the national infrastructure exists to allow consumers to access cheaper energy in this way, the next step is to support the uptake of smart technology within the home that can take

<sup>62</sup> Ofgem, *Electricity Settlement Reform*,

<sup>63</sup> National Grid ESO, *Future Energy Scenarios, 2023* p.87, Chart EC 12



advantage of variable electricity prices. Heat pumps accompanied by either batteries or thermal stores would allow families to draw power when it is cheapest but heat their homes whenever they wish. Similarly, electric cars that can not only draw from the electricity grid but serve as a battery for the family home represent a major opportunity to reduce both the cost and construction challenge of our 2030 electricity grid. ESO scenarios show that high uptake of 'V2G-enabled' (vehicle to grid) cars could mean a reduction in peak demand for EV charging of more than 60%.

That reduction in demand saves British families money in three ways: direct reduction in bills by shifting demand to cheaper times, reduction in national cost of infrastructure to meet peak demand, and reduced unit charges for electricity due to lower marginal price of electricity and fewer constraint payments. Crucially, for our purposes, it also means less infrastructure to build on a very tight timeline. While messing with the current ZEV mandate seems a time-consuming and politically thankless task pre-2030, **a Labour Government could consider introducing grants to levelise the cost between V2G (which currently cost more) and standard chargers.**

Not all flexibility will take place at the domestic level. Industrial-level flexibility already exists and the electricity sector itself can provide flexibility through long term storage solutions - such as hydrogen and pumped hydro- and shorter-term options such as batteries, compressed air and thermal storage. **The Government is currently developing business models for these new utility-scale storage facilities, with an aim of completing the regulatory structure by 2026. A Government taking office in likely early 2025 could conceivably accelerate this ambition, with business models complete before the end of 2025.**

An additional route for maintaining flexibility is via interconnectors to our neighbours. The current regulatory regime appears to function well, with additional capacity due to come online over the next few years. This is a healthy development, and it should remain a priority to connect the UK with neighbouring grids, especially where nations use a differing generation mix or may have countervailing weather conditions.

**Actions for 2030:**

- Define decarbonisation target [DESNZ, No.10]
- Depending on the decided decarbonisation target, fast track gas with CCS within new cluster funding routes [DESNZ, HMT]
- Launch Warm Homes plan following sufficient workforce and supply chain planning [DESNZ, DLUCH]
- Introduce/pass Future Homes Standard [DLUCH requiring primary legislation]
- Ensure smart meter deployment [DESNZ]
- Grants to levelise cost between vehicle to grid (V2G) technology and standard chargers [DESNZ, HMT]
- Accelerate business models for large scale energy storage by the end of 2025 [DESNZ]
- Maintain interconnection as a priority for flexibility [DESNZ]



### A note on market reform

Decarbonising the power system will require the right market arrangements to signal the right investments from the private sector. Reflecting this need, the Government initiated the Review of Energy Market Arrangements (REMA) to identify reforms needed to transition to a decarbonised, cost effective and secure electricity system. The consultation includes 74 questions on a range of policies for mass low carbon power, flexibility, capacity adequacy, system operability and more.

However, the approach demanded by a 2030 deadline for decarbonising the grid is different. It is unlikely that REMA, in its current form, will take effect before 2030. Attempting to accelerate an overhaul of the market arrangements while also racing towards decarbonising the system will cause immense complexity – not least because it is extremely difficult to design market arrangements around a market that is rapidly changing. Stakeholders also argue that achieving 2030 is not dependent on fundamental, radical market reform.

Additionally, key proposals such as decoupling the price link between gas and electricity will be less pertinent in a system that is increasingly less reliant on gas. The complexity and uncertainty around these reforms risks not only increasing the cost of capital but also preventing both civil servants and the network bodies from delivering on an accelerated decarbonisation target.

We therefore recommend that an incoming Labour government should give clear instructions about which elements of REMA should:

- Be kept - and accelerated,
- Be ditched for the sake of speed, and
- Remain in consultation with the aim of giving clear guidance within the parliament of how the market will function after 2030.

Our early conversations with the sector indicate that the following key columns of REMA would be categorised thus:

Accelerate	Ditch	Postpone to 2030 (review and provide guidance during next parliament)
Half hourly settlement	Imminent implementation of locational marginal pricing	Locational signals for energy pricing
Evolution of CfD reform (including introduction of non-price factors)	Decoupling of gas and electricity price link	



## Areas for further research

Labour's 2030 target requires a wide-ranging, detailed policy programme to achieve the pace and scale necessary to generate, transport, and balance a low-carbon power system that meets the needs of Britain. The focus of this report is on the network infrastructure. As consumer energy needs shift from today's mix of gas, petrol and electricity towards electric-only households, and sources of renewable energy proliferate, much more hardware will be required to move green electricity around the country.

While the report recognises the need for wider policies related to increase flexibility for both generation and balancing the grid, we note that further research is required to fill key policy gaps here for Labour's 2030 programme. Our research indicates that these include, but are not limited to:

- Preparing the low-voltage distribution network for electrification of demand and uptake of decentralised generation.
- Commercialising and scaling flexible low-carbon generation (such as carbon capture and hydrogen) and storage (particularly Long Duration Energy Storage) to manage times of intermittent wind and solar power.
- Enhancing regional cooperation around the North Sea and Irish Sea for interconnection solutions also to manage intermittency.
- Improving the current economic case for offshore wind in light of the recent Contracts for Difference (CfDs) Allocation Round 5 which attracted no bids for, and thus failed to award any contracts to new offshore wind projects.
- Addressing wider supply chain constraints beyond transmission network infrastructure for low-carbon technologies. Existing work is ongoing in this space by Baringa, commissioned by DESNZ, although it is possible that proposed policy solutions may not be aligned to the 2030 timeline given the current Government's target for decarbonisation is five years later.
- Delivering a mass-scale street-by-street energy efficiency programme to retrofit British homes.

## Labour's 'to-do' list for a 2030 network

With so much to do, the minister in charge of reaching 2030 will need to prioritise ruthlessly. To guide this process for the network, we provide a sequenced and itemised 'to do' list, showing when each item must be tackled.

*Note: Italics represent Nick Winser's recommendations. Colour code: Dark orange represents the implementation of the policy; light orange represents where policies require continued efforts to sustain; grey represents where Nick Winser's reforms may need to be implemented if not done so already by the current Government.*

Theme	Task	Org/Dept	2025	2026	2027	2028	2029	2030
Institutional	Appoint a Cabinet Officer minister to oversee and coordinate the 2030 target	No 10	Dark orange					
	Launch GB Energy	No 10, HMT, DESNZ, DBT	Dark orange					
Strategic planning	Publish CSNP2030 informed by spatial plan	DESNZ instruct FSO	Dark orange	Light orange				
	<b>Prior to the election</b> , FSO consider skills needs plan for producing additional network plans	FSO, TOs						
	Set out devolved net zero budgets from Green Prosperity plan	DESNZ, HMT	Dark orange					
	Identify LAEP priority areas and co-fund plans for constrained LAs/CAs	FSO	Dark orange	Light orange	Light orange	Light orange		
	Implement regional system planning	RSP	Light orange	Light orange	Light orange	Light orange	Dark orange	Dark orange
Regulation for investment	Publish clear SPS guidance to Ofgem on prioritising duties for network investment	DESNZ		Dark orange				
	Design strategic investment plans for CSNP2030 broadly modelled on ASTI with competition	Ofgem			Dark orange			
	Launch competitive tender on CSNP2030 investment framework and award projects	Ofgem			Dark orange	Dark orange		
Planning, consenting, and communities	Identify minimum viable consenting route to approving CSNP2030 including accelerating Environmental Outcomes Report	DEFRA		Dark orange	Dark orange			
	Implement Winser reforms if not done already ( <i>italicised below</i> )		Grey	Grey				
	<i>Implement standardisation of route design for an accelerated optioneering process</i>	FSO, TOs, Ofgem, DLUHC, Scottish & Welsh govt	Dark orange	Dark orange				
	<i>Implement equipment standards in line with Europe</i>	DESNZ, FSO, Ofgem, TOs	Grey	Grey				







Minimising the network challenge	Define decarbonisation target	DESNZ, No.10	■																		
	Fast track gas with CCS within new cluster funding routes in line with target	DESNZ, DBT, HMT		■	■																
	Introduce and pass Future Homes Standard	DLUCH, primary legislation	■	■																	
	Launch Warm Homes plan following sufficient workforce and supply chain planning including smart meter deployment	DESNZ, DLUCH		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Introduce grants to levelise cost between vehicle to grid technology and standard chargers	DESNZ, HMT	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Accelerate business models for large scale energy storage	DESNZ, DBT	■	■																	
	Maintain interconnection as a priority for flexibility	DESNZ	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
REMA	Implement half hourly settlement	DESNZ	■	■																	
	Continue evolution of CfD reform with introduction of non-price factors	DESNZ	■	■																	
	Identify policies to remove and postpone from REMA	DESNZ	■																		
	Continue work to review locational pricing signals and, depending on decision, announce guidance for action post-2030	DESNZ	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■